



DER ROAD SHOW

Peoples Energy Resources
&
Gen-X of America

MicroTurbines: Installation and Operation



City of Chicago

Dept. of Environment

“ John, ... we are really interested in hearing about Distributed Generation and what is today and not what it could be tomorrow!”

Antonia Arnelas

Brief History



The Emergency Power Experts



Back-Up Power Systems

[WHY GEN-X](#)[PRODUCTS - SPECS](#)[FAQ's](#)[NEW HOME BUILDERS](#)[COMMERCIAL](#)[CONTACT US](#)

Products & Specifications

Gen-X now offers a wide variety of back-up solutions for your home or business.

Select which category below, then review the complete line.

PRODUCT	CATEGORY	DESCRIPTION
	<u>Generators</u>	Fully automatic natural gas back-up generator systems for short and long term supply of backup power.
	<u>PowerBancs</u>	100% electronic energy storage solution that offers automatic and instantaneous access to reserve emergency power for your home or business.
	<u>Back-up Sump Pump Products</u>	Quality back-up systems that provide reliable pumping power
	<u>Capstone Micro Turbine Generators™</u> (*coming soon!)	Natural gas MicroTurbine generators for commercial backup power, peak shaving and utility grid parallel applications



1.877.GENX.NOW

1.877.436.9669

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Revolution in Back-Up Power



A **Powerbanc™** Back-Up Power System provides **energy insurance** and peace of mind when power failures occur.

No matter what the season, or what the back-up power needs are, a **Powerbanc™** can provide emergency power instantaneously to your home or business, while others are scrambling for generators or heading for emergency shelters.

In the News

As seen on NBC's "Today" show!

[Click to view video:](#)



The **Powerbanc™** is a 100% electronic back-up power solution for your home or business. It provides 24-36 hour protection for your most critical circuits. No engines to start, no complicated transfer switches to activate — just the confidence that your home or business is ready in the event of a power failure.

This system comes with an industry leading 3-year warranty.



NextPower, LLC
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(847)866-7967 • info@powerbanc.com
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City of Chicago – UL924 Affordable Single Phase Solution for Emergency Lighting



\$12,000 to \$15,000 Range-Installed !

PowerLast

Acrobat Reader - [Powerlast - UPS.pdf]

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158%


Residential DG

- > Combined UPS & Marathon Engine
- > 5kW – 40,000 Hour Life
- > Installed for \$15,000 to \$18,000

When you need an uninterruptible power supply, it should be just that – *uninterruptible*. The Marathon PowerLast® UPS is a true, continuous source of power for your applications. When the system is activated by loss of grid power, the high-capacity battery bank picks up the load seamlessly. If the grid power remains unavailable for an extended period, the Marathon engine starts up gently and begins charging the battery bank while carrying the electric load. When the utility power returns, the system continues to provide power until the utility is stable and then quietly returns to standby operation. By using clean, efficient natural gas or propane, the Marathon PowerLast® UPS can supply electric power to your critical loads for as long as you need it – no window, no worry, no problem.

Features

- Complete 1kW – 5kW power solution
- Long service interval – typically 4,000 hours or once every 3 years.
- Stable, clean pure sine-wave electric power at 120 VAC or 240 VAC



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Peoples Energy Resources

**Building a Business
Around
Distributed Generation**



Peoples Energy Resources & Gen-X of America

Using Distributed Generation to Make
Standby Power Affordable



60% to 90% Savings

Value Proposition:

How would you like to have the
benefit of a Standby Generator at
a substantial savings. ?



Distributed Energy Program Summary

Peoples Energy Resources' Business Model is to create a Distributed Generation Program of Electrical Power in which they will own and operate the Electrical Power Generating Equipment, including purchasing natural gas to the generator.

The Generator will be configured to be Grid Parallel, in which the equipment will be operated at various times of the day depending on the rate structure. The equipment will also be Standby Capable in the event of a power failure.



Program Summary (Cont'd)

The Consumer will purchase power from Peoples Energy Resources at the same rate they would from their current electric supplier, such as ComEd. The Consumer will then purchase power from their supplier during the rest of the day while the generator is not operating.



Program Summary (Cont'd)

The ideal size load is between 50 kW and 100kW, or greater than 200 kW, due to ComEd rate structures relative Standby Charges.

Peoples Energy Resources requires a small contribution from the customer in the neighborhood of 10% to 40 % of the cost of a typical installed Standby Generator.

Gen-X provides a turn-key solution to Peoples Energy for the Engineering, Installation, and Servicing of this equipment.

DG & The Rubics Cube

“ A COMPLEX PROBLEM FOR THE CUSTOMER ”





Who is the Customer ?

- ☐ The Consumer
- ☐ The City of Chicago
- ☐ ComEd
- ☐ Peoples Energy



Customer DG Choices

6 Sides of the Rubics' Cube

1. Capstone MicroTurbine
2. Generac DG50's
3. Hess MicroGen
4. DTE Energy Technologies
5. IR Energy Systems
6. Turbec



Customer Requirements

9 Squares per Side of the Rubics' Cube

1. Air Quality
2. Noise
3. Inside/Outside/Ground/Roof
4. Utility Voltage
5. Peak Load/Motor Loads
6. Combined Chilling and Heat Possibilities
7. Gas Pressure
8. Rate Structure: Gas and Electric
9. Installed Cost



1st Installation -30kW Capstone



White Hen Pantry - Bensenville





Asta HealthCare - Elgin





Asta HealthCare - Rockford





Heinemann Bakery

(Replaced Parallon – Allied Signal)





Goose Island Brewery





Hess MicroGen Installation





Hess MicroGen Dump Radiator





Capstone CHP





DTE Energy Technologies





PERMITTING

- > City of Chicago
- > ComEd



Permitting: City of Chicago

- ✦ Four Years ago it took from 3 months to 12 months to obtain a permit for a Capstone Installation. We tried different Electricians ! We tried different Expediting Services !
- ✦ Today we actually received one permit in two days for the University of Chicago Dialysis Center!



Permitting: City of Chicago Gen-X Experiences

- **Reasonable People** : We demonstrated that a Plat of Survey did not exist and we presented digital pictures of the site as a deviation.
Permit approved !
- **State of the Art Processes** : A new system, and Online Forms, Instructions and Status !
- **Do It Right the First Time** : Knowing what to do is the secret to a speedy permit process !



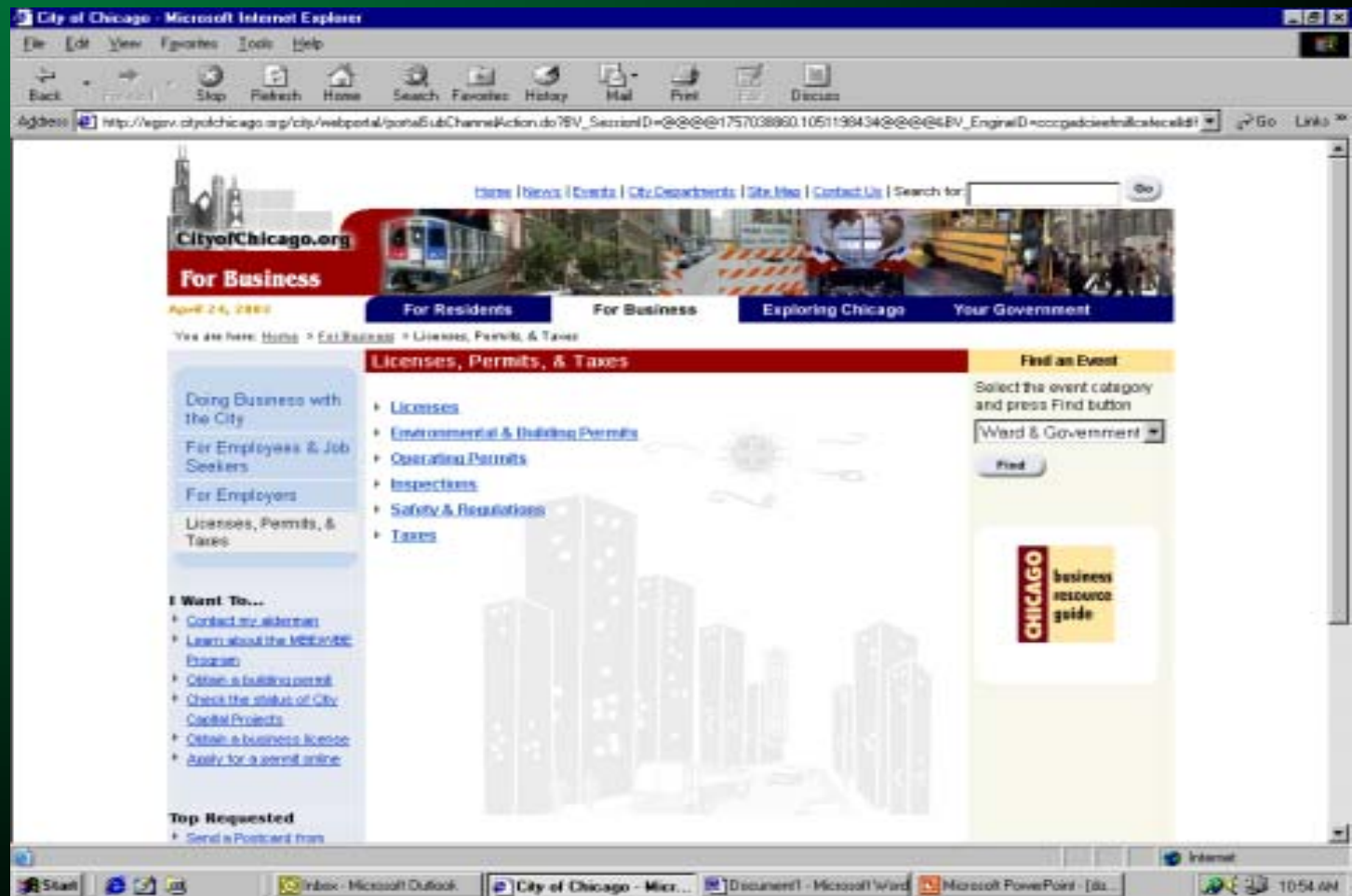
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Permits





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Application Status

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Application #: 1 Application Date: 01/11/02 Last Submit : 07/25/02

Description: 3N--GENERAL BUILDING PERMIT FOR A 27-STORY MIXED USE RESIDENTIAL /

Total Records: 10

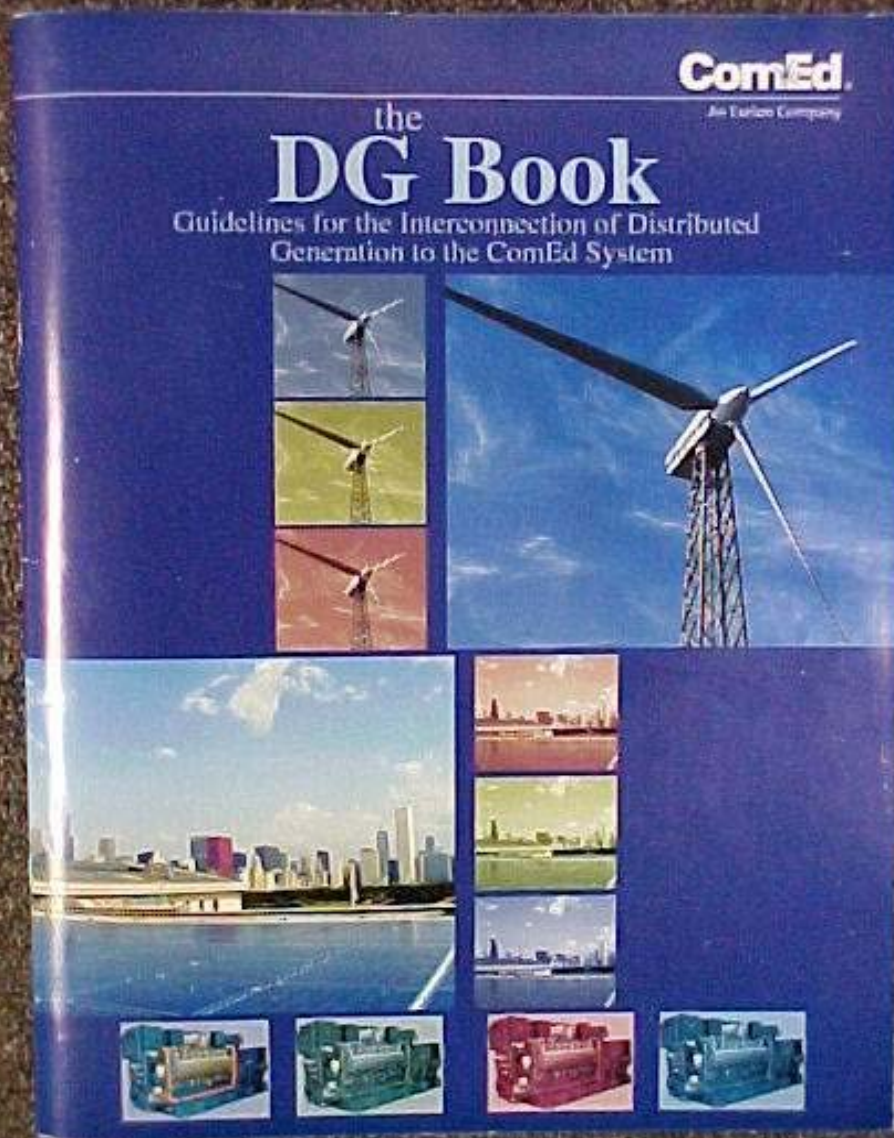
Discipline	Appr. Date	Status
ACCESSIBILITY	01/04/02	APPROVED
ARCH	06/13/02	APPROVED
ELECTRICAL	01/04/02	APPROVED
ENVIRONMENTAL	07/23/02	NEEDS CORRECTION
FIRE	03/02/02	APPROVED
FURNACE	07/04/02	APPROVED
PLUMBING	03/13/02	APPROVED
REFRIGERATION	07/23/02	NEEDS CORRECTION
VENTILATION	07/04/02	APPROVED
ZONING	01/11/02	NEEDS CORRECTION

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Permitting : ComEd InterConnection

- ✓ 3 Year Cooperative Effort
- ✓ The DG Book
- ✓ Plan A
- ✓ Plan B
- ✓ Cost
- ✓ Time
- ✓ Schweitzer Relay





Plan “A”

- Less Than 2.5 Megawatts
- Generator produces less than 50% of the Line Load
- ComEd Fee : less than \$3500



Plan “B”

- Greater than 2.5 Megawatts but
Less Than 10.0 Megawatts
- Generator produces more than 50% of the Line
Load
- ComEd Fee : less than \$150,000 !



ComEd - Timing

2 to 4 weeks

Not a Problem !



Schweitzer Relay

Secondary safety device beyond the built-in safety devices of the generator manufacturer



\$3600 Installed



**Where do we go from
here !**



Win-Win Proposition

- ✔ Peoples Energy Resources is willing to Purchase, Install, Operate, and Maintain DG Equipment at a savings over Standby Generators of more than 60%! Certainly a more reasonable cost to absorb to meet the 2003 Chicago Electrical Code !
- ✔ This program can substantially reduce the load on Transmission Lines and the cost of purchasing power on the spot market ! With all of the facilities occupied by the City of Chicago alone, more than 100 Megawatts of power can be shed from the grid over the next two to three years !
- ✔ Multiple points of distribution is an advantage when you think about Homeland Security ! It is easier to take out one site than multiple sites!
- ✔ And using clean burning Natural Gas eliminates the need for onsite storage of diesel fuel!



Something to Remember !

Every morning in Africa, a Lion awakens knowing that it must outrun the slowest Gazelle, or it will starve to death.

Every morning in Africa , a Gazelle awakens knowing that it must outrun the fastest Lion, or it will get eaten alive.

The moral of the story is that no matter whether you are a Lion (City of Chicago) or a Gazelle (Gen-X), when the sun comes up, you had better be running !